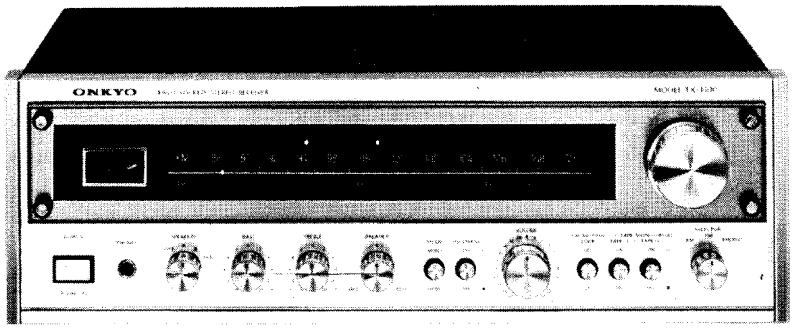
SERIAL **NO.3031**

ONKYO® SERVICE MANUAL

SERVO LOCKED
FM/AM STEREO RECEIVER
Model TX—1500



ONKYO®
AUDIO COMPONENTS

SPECIFICATIONS

U.S.A. Model

Amplifier section

Power Output	15 watts per channel, min. RMS, at 8 ohms or 4 ohms, both channels driven, from 20 Hz to 20 kHz, with no more than 0.5 % total harmonic distortion. 17 watts per channel, min. RMS, at 8 ohms both channels driven, 1 kHz, 0.5 % THD. 20 watts per channel, min. RMS, at 4 ohms both channels driven, 1 kHz, 0.5 % THD.
Total Harmonic Distortion	0.5 % at rated power 0.3 % at 1 watt output
IM Distortion	0.5 % at rated power 0.3 % at 1 watt output
Damping Factor	20 (8 ohms 1 kHz 10 watts)
Frequency Response	20 – 30,000 Hz (±1 dB)
Sensitivity and Impedance	PHONO: 2.5 mV 50 kohms TAPE PLAY: 150 mV 50 kohms TAPE REC: 150 mV 50 kohms
Phono Overload	100 mV RMS 1 kHz 0.5 % THD
Bass Control	± 12 dB at 100 Hz
Treble Control	±10 dB at 10 kHz
Signal-to-Noise Ratio	PHONO: 65 dB (IHF C NETWORK) TAPE: 80 dB (IHF C NETWORK)
RIAA Curve Deviation	±0.8 dB at 30 Hz to 15 kHz

Tuner section

Tuning Range	FM: 88 – 108 MHz AM: 530 – 1605 kHz
Usable Sensitivity	FM mono: 2.3 μV 12.4 dBf FM stereo: 5 μV 19.2dBf AM: 25 μV
50 dB Quieting Sensitivity	FM mono: 4.5 μV 18.3 dBf FM stereo: 50 μV 39.2 dBf
Intermediate Frequency	FM: 10.7 MHz AM: 455 kHz
Capture Ratio	FM: 2 dB
Image Rejection	FM: 45 dB AM: 40 dB
IF Rejection	FM: 80 dB AM: 30 dB
Signal-to-Noise Ratio	FM mono: 65 dB FM stereo: 60 dB AM: 40 dB
Alternate Channel Att.	FM: 60 dB
AM Suppression	FM: 50 dB
Harmonic Distortion	FM mono: 0.25 % AM: 0.9 % FM stereo: 0.5 %
Frequency Response	FM: 30 – 15,000 Hz ±1.5 dB
Stereo Separation	FM: 35 dB at 1 kHz 30 dB at 100 – 10,000 Hz
Muting Level	FM: 3 μV (14.7 dBf)
Stereo Lamp Level	FM: 3 μV (14.7 dBf)
Locking Level	FM: 3 μV (14.7 dBf)
Tuning Meter	Signal Strength Meter

General

Power Supply	AC 120 V 60 Hz.
Dimensions (W x H x D)	17-5/16" x 5-7/8" x 12-3/16" 439 x 149 x 310 mm
Weight	16.1 lbs. 7.3 kg.

Universal Model

Amplifier section

Power Output Dynamic	70 watts total at 4 ohms 0.5 % THD.
Continuous	20 watts per channel, min. RMS, at 4 ohms both channels driven, 0.5 % THD. at 1 kHz 17 watts per channel, min. RMS, at 8 ohms both channels driven, 0.5 % THD. at 1 kHz 15 watts per channel, min. RMS, at 4 ohms or 8 ohms both channels driven, from 20 Hz to 20 kHz, 0.5 % THD.
Total Harmonic Distortion	0.5 % at rated power 0.3 % at 1 watt output
IM Distortion (70 Hz: 7 kHz= 4 : 1)	0.5 % at rated power 0.3 % at 1 watt output
Damping Factor	20 (8 ohms 1 kHz)
Frequency Response	20 – 20,000 Hz (±1 dB)
Sensitivity and Impedance	PHONO: 2.5 mV 50 kohms TAPE PLAY: 150 mV 50 kohms TAPE REC: 150 mV 50 kohms
Phono Overload	100 mV RMS at 1 kHz 0.5 % THD.
Tone Control BASS	±12 dB at 100 Hz
TREBLE	±10 dB at 10 kHz
Signal-to-Noise Ratio	PHONO: 65 dB (IHF C NETWORK) TAPE: 80 dB (IHF C NETWORK)
RIAA Curve Deviation	±0.8 dB at 30 Hz to 15 kHz

Tuner section

Tuning Range	FM: 88 – 108 MHz AM: 530 – 1605 kHz
Usable Sensitivity	FM mono: 2.3 μV (12.4 dBf)IHF 1.8 μV (S/N 26 dB, 40 kHz Devi.) DIN FM stereo: 5 μV (19.2 dBf) IHF 50 μV (S/N 46 dB, 40 kHz Devi.) DIN AM: 25 μV
50 dB Quieting Sensitivity	FM mono: 4.5 μV (18.3 dBf) FM stereo: 50 μV (39.2 dBf)
Intermediate Frequency	FM: 10.7 MHz AM: 455 kHz
Capture Ratio	FM: 2 dB
Image Rejection Ratio	FM: 45 dB AM: 40 dB
IF Rejection Ratio	FM: 80 dB AM: 30 dB
Signal-to-Noise Ratio	FM mono: 65 dB AM: 40 dB FM stereo: 60 dB
Alternate Channel Att.	FM: 60 dB
Selectivity	FM: 42 dB DIN (±300 kHz, 40 kHz Devi.)
AM Suppression Ratio	FM: 50 dB
Harmonic Distortion	FM mono: 0.25 % AM: 0.9 % FM stereo: 0.5 %
Frequency Response	FM: 30 – 15,000 Hz ± 1.5 dB
Deemphasis Switch	FM: 50 μs/75 μs
Stereo Separation	FM stereo: 35 dB at 1 kHz 30 dB at 100 – 10,000 Hz
Muting Level	FM: 3 μV
Stereo Threshold	FM: 3 μV
Servo Lock Lamp Level	FM: 3 μV
Spurious Rejection	FM: 78 dB (1/2 IF)
Sub Carrier Suppression	FM: 40 dB
Tuning Meter	Signal strength meter

General

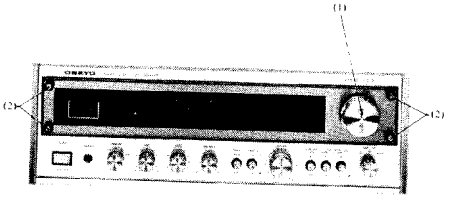
Power Supply Rating	AC 110/120/220/240 volts 50/60 Hz
Controls	POWER SPEAKERS (OFF, A, B, A+B) SELECTOR (AM, FM, PHONO) TAPE MONITOR 1 & 2 TUNING, VOLUME, BALANCE, TREBLE, BASS FM MUTING/SERVO LOCK SWITCH LOUDNESS, MODE
Antennas	FM: 300 ohms balanced AM: built in ferrite core antenna and external terminal
Outputs	SPEAKER A & B, HEADPHONES TAPE REC OUT 1 & 2, DIN REC OUT
Inputs	PHONO, TAPE PLAY 1 & 2, DIN PLAY FM & AM ANTENNA
Dimensions	439 W x 149 H x 310 D mm
Weight	7.3 kg.
Semiconductors	1 FET, 12 Transistors, 7 ICs, 21 Diodes

Specifications and features are subject to change without notice.

SERVICE PROCEDURES

1. REMOVEMENT OF DIAL GLASS

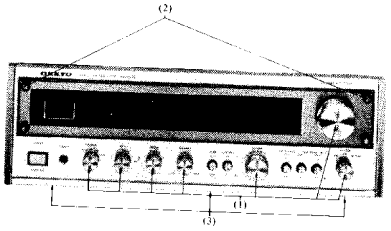
(1) Pull TUNING knob off the TUNING shaft.
(2) Remove four hex volts.



fig–1

2. REMOVEMENT OF FRONT PANEL

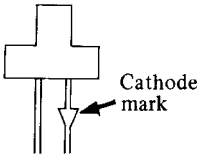
(1) Pull all knobs off control shafts.
(2) Remove two hex volts.
(2) Remove three screws.



fig–2

3. REPLACING STEREO / LOCKED INDICATOR (L.E.D.)

(1) Remove four screws which hold the top cover to the chassis and lift off the top cover.
(2) Remove a screw which hold the PC board to the front bracket.
(3) There is a cathode mark on the foot of L.E.D.



fig–3

4. REPLACING DIAL LAMP

(1) Remove four screws which hold the top cover to the chassis and lift off the top cover.
(2) Remove the two screws which hold the lamp case to the front bracket.

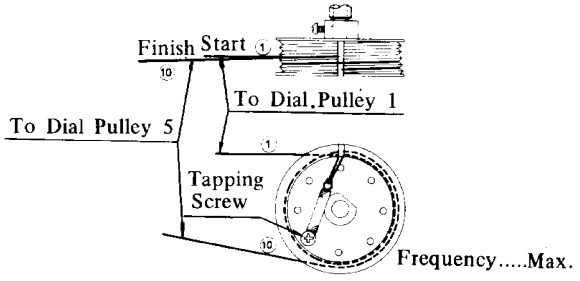
5. REPLACING POWER FUSE (U.S.A. MODEL)

(1) Remove four screws which hold the top cover to the chassis and lift off the top cover.
(2) Replace a fuse between a back panel and a power transformer.

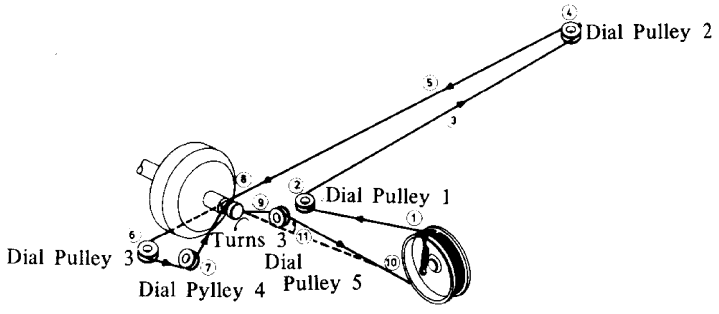
6. REPLACING SPEAKER FUSE

(1) Remove a screw which hold the fuse cover to the back panel.

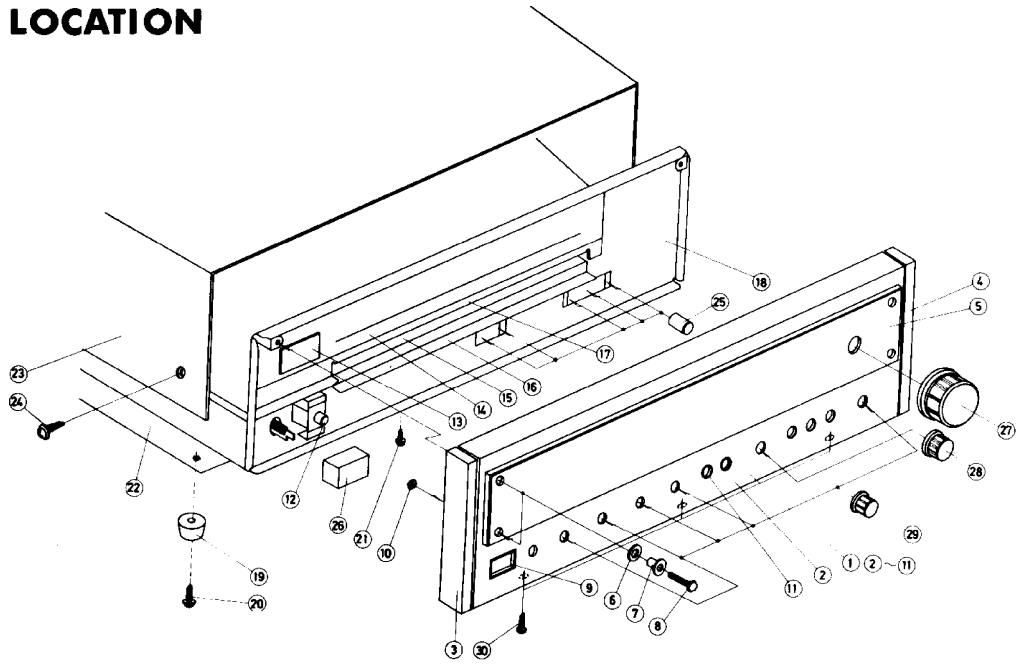
STRINGING DIAGRAM



1. Open the variable capacitor complete and tie dial cord to the spring of the drum.
2. Thread dial cord in the direction of arrow from ① to ⑧ and wind dial cord three turns around the tuning shaft counter-clockwise.
3. Thread dial cord in the direction of arrow from ⑨ to ⑩.
4. Thread dial cord to the dial pulley 5.



COMPONENT LOCATION



PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
1	13779121	Front Panel Ass'y
2	27210067	Front Panel
3	28125039A	End Cap, Left
4	28125040A	End Cap, Right
5	28191016A	Dial Glass
6	870054	Washer
7	27270017A	Spacer
8	84334015	M4x15 Hex Volt
9	27267026	Power Switch Guide
10	863140	N-4F-N Nut
11	27267010	Push Switch Guide
12	25045018	LJ-100-H Stereo Headphone Jack
13	243069	NIND-0500S69 Strength Meter
14	28130048A	Dial Plate
15	27240011	Bracket, Dial Plate
16	27300036	Pointer Rail
17	28165031	Pointer
18	27110037	Front Bracket
19	280379	Leg
20	831130162	3STW+16BQ
21	831130062	3STW+6BQ
22	27170024	Bottom Board
23	28184023A	Amp. Cover (U.S.A. Model)
	28184024	Amp. Cover (Universal Model)
24	838440109	4TTB+10C (BC)
25	28320133	Push Button A
26	28320171A	POWER Knob
27	28320170	TUNING Knob
28	2830132	VOLUME Knob
29	28320131	TONE Knob
30	834130062	3STS+6BQ

PC BOARD PARTS LIST

NAAR-395 PC. BOARD-PARTS LIST

CIRCUIT NO.	DESCRIPTION	STOCK NO.
	TRANSISTORS	
Q001	2SC380(O) or FM RF. Amp. 2SC380(Y)	2210123 or 2210124
Q002	2SC785(O-1), Mixer	2210380
Q003	2SC394(O), FM OSC.	2210393
Q101	2SC380(O) or FM IF Amp. 2SC380(Y)	2210123 or 2210124
Q105	2SC1317(R) or Locked Lamp Switch 2SC1740(Q)	2210943 or 2211182
Q106	2SC1317(Q) or Mono-ST. Switch 2SC735(Y)	2210942 or 2210244
Q107	2SC945Ⓛ(K) or Muting 2SC1740(S)	2210741 or 2211184
Q108	2SC1740(S), Locked Lamp Switch	2211184
Q302, Q402	2SC1312(G) or Tone Amp. 2SC1344(E)	2210137 or 2210975
Q701, Q702	2SC733(BL) or Transient Killer 2SC1740(S)	2210086 or 2211184
Q703	2SC1318(R) or Rectifier 2SC1318(S)	2211043 or 2211044

CIRCUIT NO.	DESCRIPTION	STOCK NO.
	ICS	
Q102	LA1230, Quadrature Det.	222455
Q103	LA3350, MPX.	222449
Q104	HA-1151, AM	222418
Q301, Q401	TA7129(ONK), EQ. Amp.	222451
Q501, Q502	STK-075, Power Amp.	222010
	DIODES	
D001	1S2687, Variable Capacitor	223110
D101, D102 D105, D108 D702-D704	1S1555	223105
D106	VD1212, Varistor	4000022
D109	1N60	223103
D701	1S1554	223106
D901, D903 D905, D907	GP-15B	223842
D909, D910 D911	10D2 or 1S1886	223805 or 223806
D912	BZ-130	223929
D913	WZ-150	223915

NAAR–395 PC. BOARD–PARTS LIST

CIRCUIT NO.	DESCRIPTION	STOCK NO.
	COILS	
L001	NFA 3001 or FM RF.	233088–1 or
	NFA–3009	233106
L002	NFRF–3005, FM RF.	233103
L003	NFT–1501, FM RF.	233037
L004	NFO–3003, FM OSC.	233090
L101	NCCH–1501 or 3.3μH	233024 or
	NCCH–1005	233105
L102	NCCH–1506 18μH	233074
L103, L104	NMC–8–5, L.P.F.	233021
L106	NMO–2503, AM OSC.	232013
	TRANSFORMERS	
T001	NIT–0518, FM IF.	233085
T101	NIT–3516 or FM Det.	233083 or
	NFIF–6003	233101
T102	NIT–0519, AM Det.	232041
	CERAMIC FILTERS	
X101, X102	SFE–10.7MA, FM IF.	3010003
X103	CFZ–455C, AM IF.	3010004
	CAPACITORS	
VC001–VC005	NVC2–327SA, Variable	3050004
TC005	NTC–10P02, Trimmer	3060003
C107	4.7μF, 25V, Elect.	35275047
C106	22μF10V, Elect.	35273220
C110, C142	10μF16V, Elect.	352741001
C143	1μF50V, Elect.	352780101
C144, C145	0.22μF±20% 50V, LL	392882297
C153	150pF±10% 50V, Polysteren	372321525
C154	0.47μF±20% 50V, LL	392884797
C155	0.22μF±20% 50V, LL	392882297
C156	0.33μF±20% 50V, LL	392883397
C158	220μF16V, Elect.	352742211
C160	47μF10V, Elect.	352734711
C166	360pF±5% 50V, Polysteren	372323614
C170	1μF50V, Elect.	352780101
C173	3.3μF50V, Elect.	352780331
C175	0.039μF±20% 50V, DE	374123937
C176	10μF16V, Elect.	352741001
C177	100μF16V, Elect.	352741011
C178	100μF6.3V, Elect.	352721011
C302, C402	4.7μF25V, Elect.	352750471
C303, C304	100μF, 6.3V, Elect.	352721011
C308, C408	0.47μF50V, Elect.	352784791
C309, C409	0.33μF±20% 50V, LL	392883397
C311	330μF35V, Elect.	352763311
C332, C432	0.047μF±10% 50V, DE	374124735
C333, C433	2.2μF±20% 50V, LL	392880227
C335, C435	220μF16V, Elect.	352742211
C336, C436 C337, C437	3.3μF50V, Elect.	352780331
C501, C601	1μF±20% 50V, LL	392880107
C502, C602	33μF10V, Elect.	352733301
C506, C606	100μF16V, Elect.	352741011
C507, C607	47μF50V, Elect.	352780471
C508, C608 C511, C611	4.7μF50V, Elect.	352780471
C701	4.7μF50V, Elect.	352780471
C702	220μF16V, Elect.	352742211
C705	22μF35V, Elect.	352762201
C706	220μF35V, Elect.	352762211
C914	470μF50V, Elect.	352784711
C915	470μF35V, Elect.	352764711
C916	100μF16V, Elect.	352741011
	VARIABLE RESISTORS	
R149	N10HR1KBC, Separation Adjust.	5225018
R152	N10HR5KBC, 19 kHz Adjustment	5225056
R336, R436	N24RGP250KBT30–41C, Volume	5172042
R342	N16RL100KW30, Balance	5104046
R345, R351 R445, R451	N16RGM100KB30, Tone	5148014
	RESISTORS	
R701	1.2kΩ2W, Oxide Film	441721224
R709	620Ω1W, Oxide Film	431626214
R904	100Ω2W, Oxide Film	441721014
R905	220Ω2W, Oxide Film	441722214
R157	560Ω1W, Oxide Film	431625614
	SWITCHES	
S801	NRS–143–30ZV, Source Selector	25030075
S802–S804	NPS–122X3LA, Mut. Tape–1, 2	25035032
S805, S806	NPS–222–L14A, Loudness, Mode	25035049
	TERMINALS	
P801	NPJ–2PDBL10, Phono Input	25045034
P802, P803	NPJ–4PDBL11, Tape	25045020
	SHIELDED PLATES	
	Front End Top	27150056A
	FM OSC.	27150057
The Universal type adds from the USA model at the following parts.		
S807	NSS–2225, De Emphasis Selector Switch	250142
P804	S–I3316, DIN Socket	250199

PILOT LAMP PC. BOARD–PARTS LIST

CIRCUIT NO.	DESCRIPTION	STOCK NO.
	PILOT LAMPS	
PL801–PL803	250mA, 6.3V, Dial Illumination	210026
	Fuse Holder, SN5051	250113
PL804	DIAL POINTER LAMP	210015A

L.E.D.PC. BOARD–PARTS LIST

CIRCUIT NO.	DESCRIPTION	STOCK NO.
D801, D802	SE1103R, L.E.D.	225010

POWER FUSE PC. BOARD–PARTS LIST (Only U.S.A. Model)

F901	2A(ST–2), Fuse	252044
	Fuse Holder, SN5051	250113

ALIGNMENT PROCEDURES

INSTRUMENTS REQUIRED

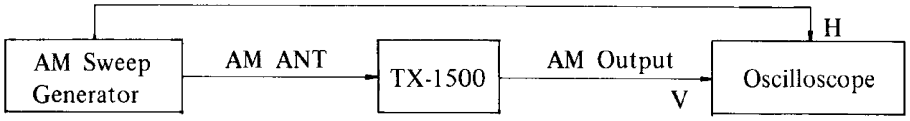
1. AM Sweep Generator
2. AM and FM Signal Generator
3. Vacume Tube Voltage Meter (VTVM) AC, DC
4. Oscilloscope
5. Distortion Analyzer
6. Stereo Modulator
7. Frequency Counter

GENERAL ALIGNMENT CONDITIONS

1. Signal input should be kept as low as possible.
2. Standard modulation is 400Hz 30% (AM), 400Hz 100% (FM MONO) pilot 10% sub and main 90% (FM STEREO).

(1) AM IF ALIGNMENT

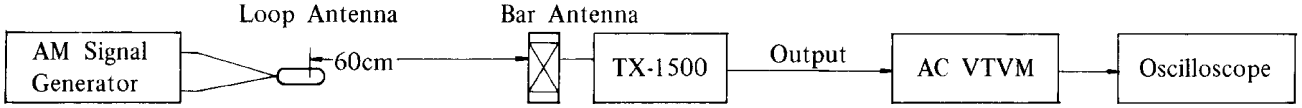
1. Set SELECTOR switch to AM.
2. Set radio dial to quiet point.



Set signal	Adjust	Oscilloscope	Remarks
455 KHz	X103 (CFZ-455C)	Maximum Symmetrical Response	Usually not necessary to adjust

(2) AM RF ALIGNMENT

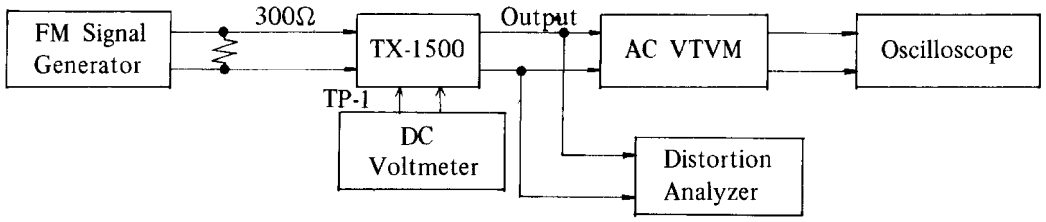
1. Remove a screw on the AM antenna cover.



Step	Set Signal	Set Radio Dial	Adjust	VTVM reading	Remarks
1	515 KHz 400 Hz 30%	Lower end (515 KHz)	L103 NMO-2503	Maximum	Repeat step 1 and 2 as necessary
2	1680 KHz 400 Hz 30%	Upper end (1680 KHz)	TC-002	Maximum	
3	600 KHz 400 Hz 30%	600 KHz	L005 NMA-1008	Maximum	Repeat step 3 and 4 as necessary
4	1400 KHz 400 Hz 30%	1400 KHz	TC-001	Maximum	

(3) FM FRONT END ALIGNMENT

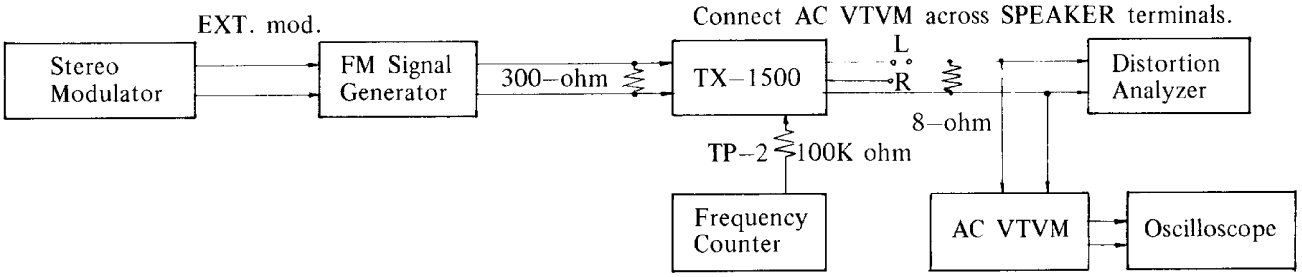
1. Set SELECTOR switch to FM.
2. Push MUTING switch to off.
3. Connect FM Signal Generator to 300-ohm antenna terminals.
4. Connect DC Voltmeter to TP-1 terminals.



Step	FM Signal Generator	Dial to set	Adjust	Output Indicator	Adjust for	Remarks
1	No signal	Quiet Point	T101 Bottom	DC Voltmeter	OV	Repeat step 1 and 2 as necessary.
2	98 MHz 60 dB 400 Hz 100% mod.	98 MHz	T101 Top	Distortion Analyzer	Minimum	
3	90 MHz 60 dB 400 Hz 100% mod.	90 MHz	L004 OSC Coil NFO-3003	AC VTVM or Oscilloscope	Maximum	Repeat step 3 and 4 as necessary.
4	106 MHz 400 Hz 60 dB 100% mod.	106 MHz	TC005		Maximum	
5	90 MHz 400 Hz 100% mod.	90 MHz	L001, L002		Maximum	Repeat step 5 and 6 as necessary.
6	106 MHz 400 Hz 100% mod.	106 MHz	TC003 TC004		Maximum	
7	98 MHz 400 Hz 100% mod.	98 MHz	T001 NIT-0518		Maximum	

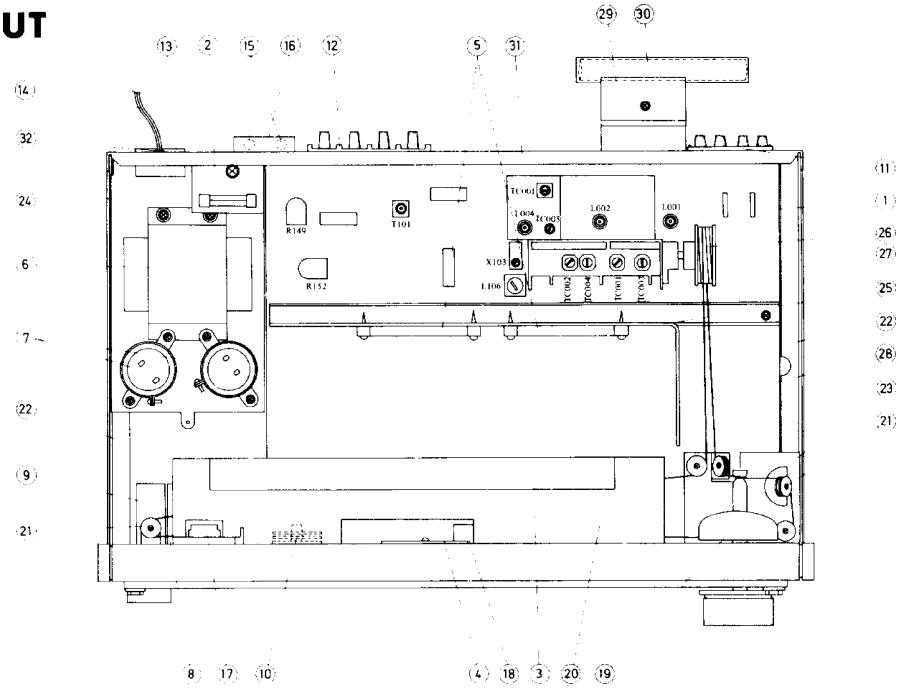
NOTES: When adjust step 5 and 6, set FM Signal Generator level as low as possible.

(4) FM MONO DISTORTION AND MULTIPLEX ALIGNMENT



Alignment	Step	FM Signal Generator	Stereo Modulator	Dial to set	Adjust	Output Indicator	Adjust for	Remarks
Mono Distortion		98 MHz 400 Hz 100% mod. 60 dB	———	98 MHz	T101 Bottom	Distortion Analyzer	Minimum	
19 KHz	1	98 MHz 400 Hz no mod. 60 dB	———	98 MHz	R152	Frequency Counter	19000±19 Hz	
	2	STEREO INDICATOR should light up when stereo program is being received.						
Multiplex	1	98 MHz EXT. Mod.	Pilot Sig. 10% Main & Sub Sig. 1 KHz Lch 90%	98 MHz	R149	AC VTVM Right ch.	Minimum	Repeat step 1 & 2 as necessary
	2	Same as above	Pilot Sig. 10% Main & Sub Sig. 1 KHz Rch 90%	98 MHz	R149	AC VTVM Left ch.	Minimum	

CHASSIS LAYOUT



PARTS LIST

U.S.A. Model

REF. NO.	PARTS NO.	DESCRIPTION
1	13779595	NAAR-395 Tuner and Pre/Main Amp. P.C.B.
2	13779596	NAFU-396 Power Fuse P.C.B.
3	13779597	NAPL-397 Dial Illumination Lamp P.C.B.
4	13779599	NAPL-399 STEREO/LOCKED Indicator P.C.B.
5	222010	STK-075 Power Amp. IC
6	230185	NPT-616D Power Transformer
7	3504081	4700μF35V Elect. Capacitor
8	3504012	0.01μF±20% 125V UL Capacitor
9	25035047	NPS-111-L12P Power Switch
10	25030074	NRS-144-30Y Speaker Selector Switch
11	25060003	NTM-4PUN1-L Antenna Terminal
12	25060001A	NTM-4WPUN1 Speaker Terminal
13	25050008A	S-I6432 AC Outlet
14	253072	AS-UC AC Cord
15	252025	2.5A-T Speaker Fuse
16	25050004	Fuse Holder with Cover
17	243069	NIND-0500S69 Strength Meter
18	27110037	Front Bracket
19	27205006	Drive Shaft Ass'y
20	27250011A	Lamp Case
21	27185003	Dial Pulley
22	27115018	Side Bracket
23	27140144	Bracket, Dial Pulley
24	27130098	Bracket, Power Transformer
25	27160024	Heat Sink
26	27200019	Dial Drum
27	273803	Dial Drum Spring
28	273903	Dial Cord
29	27190024	AM Antenna Case
30	232063	NMA-1008 AM Bar Antenna
31	27120065A	Back Panel
32	270025	SP-3P-4 Strainrelief

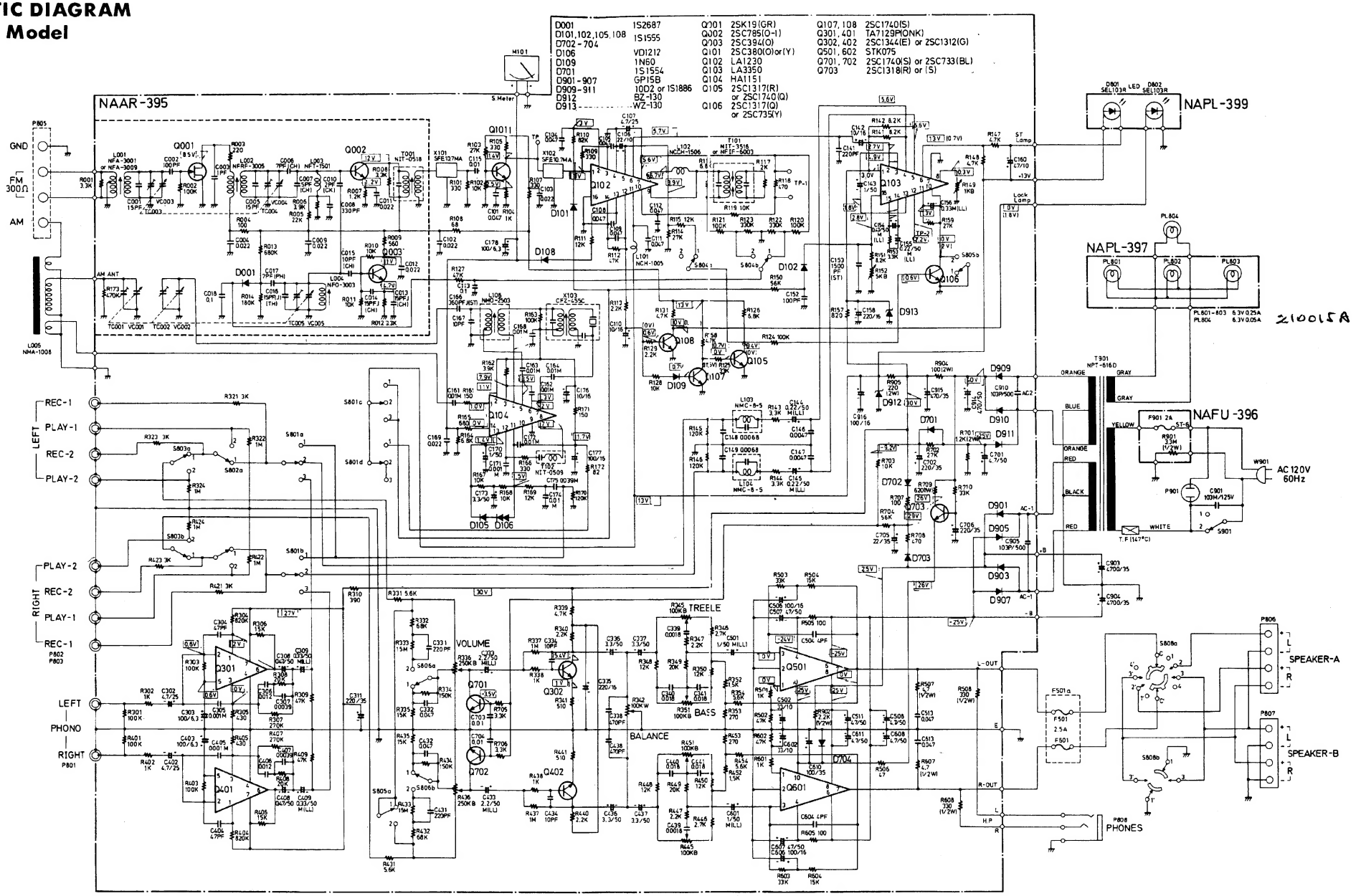
Universal Model

REF. NO.	PARTS NO.	DESCRIPTION
1	13780595A	NAAR-395a Tuner and Pre/Main Amp. P.C.B.
2	None	
3	13779597	NAPL-397 Dial Illumination Lamp P.C.B.
4	13779599	NAPL-399 STEREO/LOCKED Indicator P.C.B.
5	222010	STK-075 Power Amp. IC
6	230186	NPT-616ADGQ Power Transformer
7	3504081	4700μF35V Elect. Capacitor
8	3500052	PME271Y510CEE IS Capacitor
9	25035034	NPS-121-L Power Switch
10	25030074	NRS-144-30Y Speaker Selector Switch
11	25060003	NTM-4PUN1-L Antenna Terminal
12	25060001A	NTM-4WPUN1 Speaker Terminal
13	None	
14	None	
15	252025	2.5A-T Speaker Fuse
16	25050004	Fuse Holder with Cover
17	243069	NIND-0500S69 Strength Meter
18	27110037	Front Bracket
19	27205006	Drive Shaft Ass'y
20	27250011A	Lamp Case
21	27185003	Dial Pulley
22	27115018	Side Bracket
23	27140144	Bracket, Dial Pulley
24	27130098	Bracket, Power Transformer
25	27160024	Heat Sink
26	27200019	Dial Drum
27	273803	Dial Drum Spring
28	273903	Dial Cord
29	27190024	AM Antenna Case
30	232063	NMA-1008 AM Bar Antenna
31	27120066	Back Panel
32	None	

The Universal Model adds from the U.S.A. Model at the following parts.

25050018	PA-125, 3P Inlet
252015	1.5A-T Power Fuse
250227	SFO40A3 PS Plug
253083	AS-CEE AC Cord
250186	SI-7205-7 VS Socket

SCHEMATIC DIAGRAM
U.S.A. Model



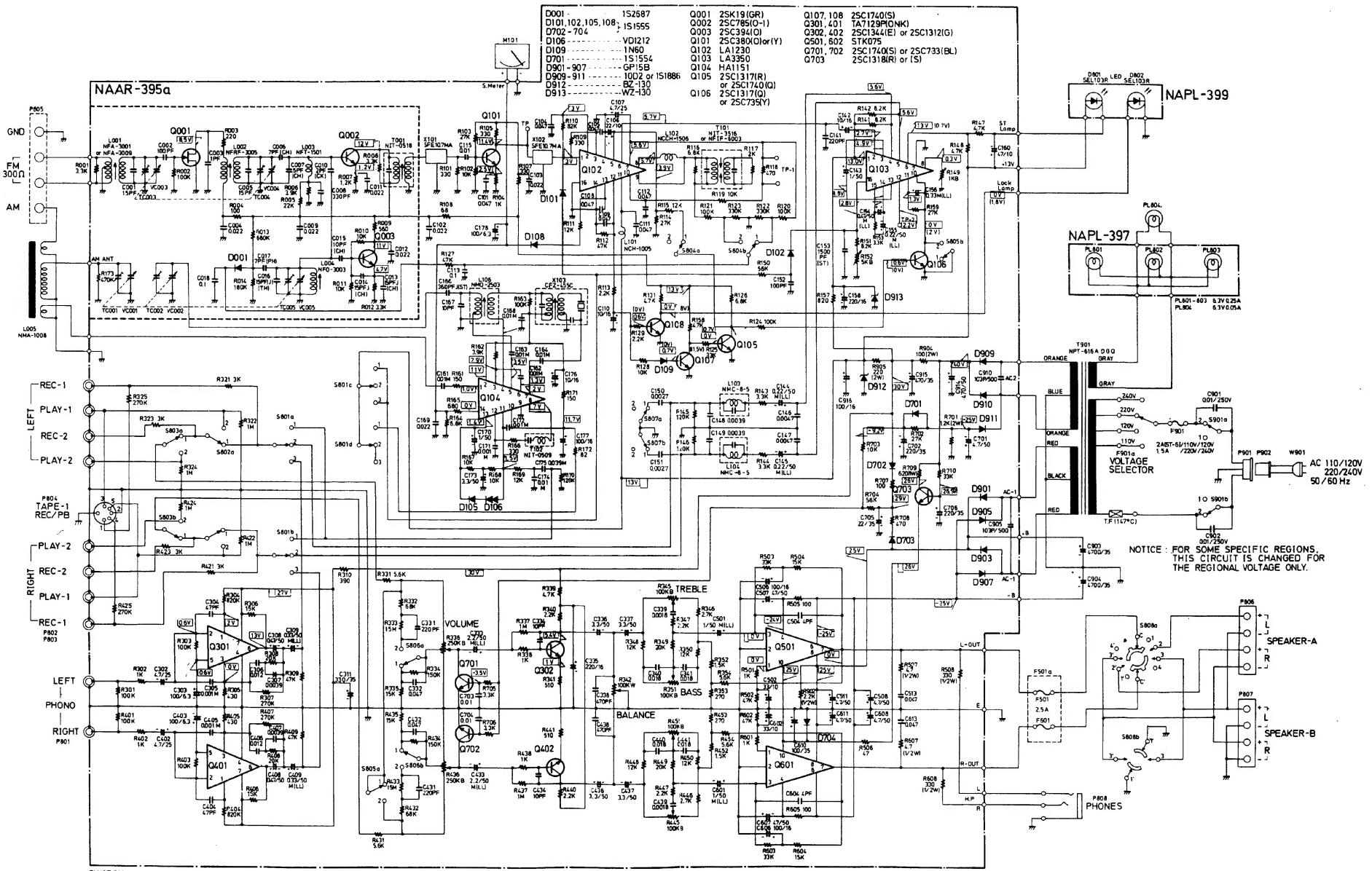
SWITCH

S801 (SELECTOR)	: 1-AM, 2-FM, 3-PHONO
S802 (TAPE MONITOR -1)	: 1-OFF, 2-ON
S803 (TAPE MONITOR -2)	: 1-OFF, 2-ON
S804 (MUTING, LOCK)	: 1-ON, 2-OFF
S805 (MODE)	: 1-STEREO, 2-MONO
S806 (LOUDNESS)	: 1-OFF, 2-ON
S808 (SPEAKERS)	: 1-OFF, 2-A, 3-B, 4-A+B
S901 (POWER)	: 1-OFF, 2-ON

NOTES;

ALL RESISTORS ARE IN OHMS, 1/4 WATT UNLESS OTHERWISE NOTED.
ALL CAPACITORS ARE IN μF, 50WV UNLESS OTHERWISE NOTED.
ELECTROLYTIC CAPACITORS (-⊕-) ARE IN μF/WV.
VOLTAGE (MEASURED WITH V.T.V.M.)
[V] DC VOLTAGE (NO INPUT SIGNAL).
(V) DC VOLTAGE (FM STEREO)

SCHEMATIC DIAGRAM
Universal Model



SWITCH

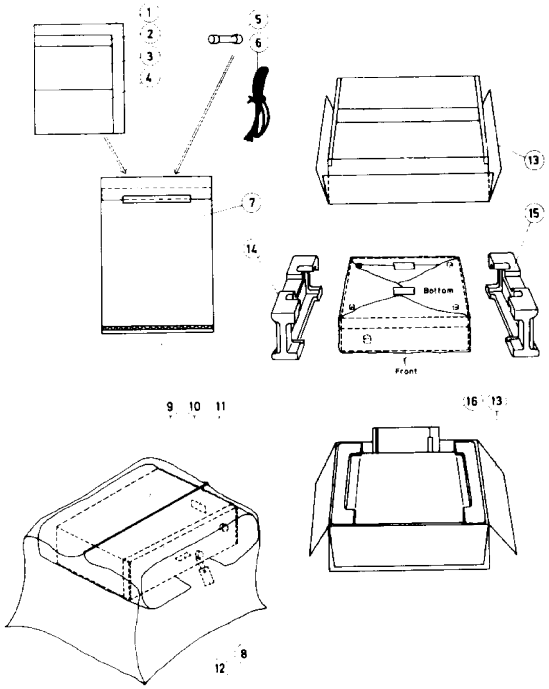
S801 (SELECTOR)	:	1-AM, 2-FM, 3-PHONO
S802 (TAPE MONITOR - 1)	:	1-OFF, 2-ON
S803 (TAPE MONITOR - 2)	:	1-OFF, 2-ON
S804 (MUTING, LOCK)	:	1-ON, 2-OFF
S805 (MODE)	:	1-STEREO, 2-MONO
S806 (LOUDNESS)	:	1-OFF, 2-ON
S807 (DE EMPHASIS)	:	1-75μSEC, 2-50μSEC
S808 (SPEAKERS)	:	1-OFF, 2-A, 3-B, 4-A+B
S901 (POWER)	:	1-OFF, 2-ON

NOTES;

ALL RESISTORS ARE IN OHMS, ¼ WATT UNLESS OTHERWISE NOTED.
ALL CAPACITORS ARE IN μF, 50WV UNLESS OTHERWISE NOTED.
ELECTROLYTIC CAPACITORS (—‖—) ARE IN μF/WV.
VOLTAGE (MEASURED WITH V.T.V.M).
[V] DC VOLTAGE (NO INPUT SIGNAL).
(v) DC VOLTAGE (FM STEREO)

PACKING PROCEDURES

U.S.A. Model

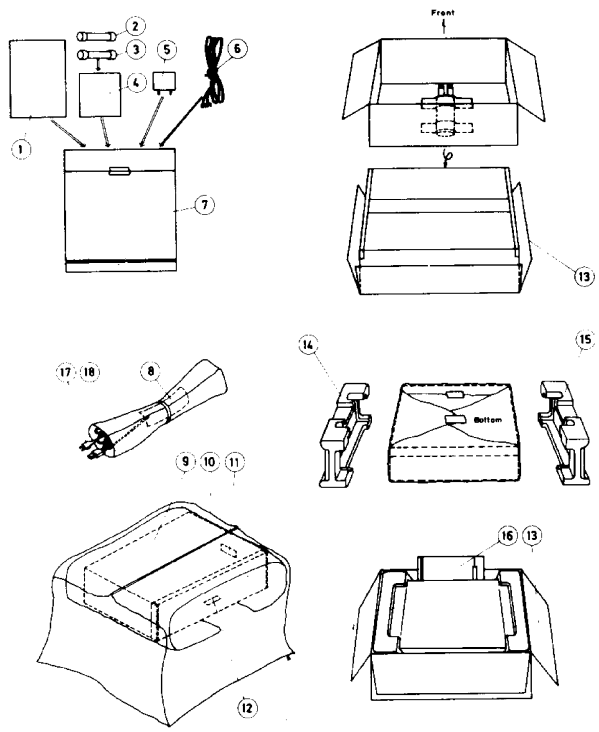


1. All printed material and accessory items are placed in a poly bag.
2. The AC Cord is wrapped in paper and wound a rubber band.
3. The cabinet composite tag is attached to the volume control.

PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
1	29340191	Instruction Manual
2	29358001	Service Station List
3	29355046	Caution Card for Warranty Card
4	29365003	Warranty Card
5	292025	Fuse
6	292064	FM Antenna
7	29100006A	Poly Bag
8	29380024	Tag, Cabinet Composite
9	29095027	Sheet 330x1100(m/m)
10	29100018	Poly Bag 650x750(m/m)
11	282969	Caution Label A
12	293041	Caution Label
13	29050111	Carton Box
14	29090187	Pad, Right
15	29090188	Pad, Left
16		Accessory Bag Complete

Universal Model



1. All printed material and accessory items are placed in a poly bag.
2. The Voltage Tag is attached to the plug of AC Cord.
3. The AC Cord is wrapped in paper and wound a rubber band.

PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
1	29340210	Instruction Manual
2	252044	Fuse 2A(ST-6)
3	292025	Fuse
4	29100002	Poly Bag 80x150(m/m)
5	25055018	Conversion Plug CV-K-1
6	292064	FM Antenna
7	29100002	Poly Bag
8	293268	Voltage Tag
9	29095027	Sheet 330x1100(m/m)
10	29100018	Poly Bag 650x750(m/m)
11	282969	Caution Label A
12	293041	Caution Label
13	29050111	Carton Box
14	29090187	Pad, Right
15	29090188	Pad, Left
16	13780119	Accessory Bag Complete
17	13876801	AC Cord
18	290076	AC Cord Wrapper

The Germany type differs from the Universal model at the following points.

1	29340211	Instruction Manual
3.5	None	
16	13782119	Accessory Bag Complete
17	253089	AC Cord AS-VDE-C
	29365001-1	Warranty Card (Addition)